REMARKS

Claims 1-68 are pending. Claims 1, 49, 51, 54, 64 are amended by way of this Amendment. All claims 1-68, as amended, are believed to be allowable over the references cited by the Examiner as discussed below. Accordingly, a Notice of Allowance for the present application is respectfully requested.

Rejection of Claims 1-3, 12-13 and 18 Under 35 U.S.C. §103

Claims 1-3, 12, 26-28, 30-35, 38-40, 44-54, 57-60, and 62-65 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson in view of Andrea and Ruegg and Zoels.

Each of independent claims 1, 49, 54, and 64 is amended to explicitly recite that the error signal is generated from the audio signals associated with both the first and second microphones. As such, the system and headset claims are structurally differentiated from the references cited by the Examiner.

Carlson discloses an apparatus for providing repeatable control of speech input to a microphone via audio feedback to a user. Specifically, Carlson compares averaged audio signal levels received by a single microphone with predetermined low and high thresholds to determine whether the microphone is too far/close to the user's mouth and/or whether the user is speaking too loudly/softly to thereby provide audio feedback to the user.

Contrary to the Examiner's contention, Carlson does not read on a first circuit providing an average of corresponding magnitudes for the audio signals received from the input source, a position estimation circuit coupled to receive the audio signals, and the error signal representing an estimate of the acoustic pick-up device being positioned differently from intended with respect to the desired acoustic source, as generally claimed in the independent claims 1, 49, 54, and 64.

Rather, Carlson's apparatus utilizes only one input microphone. Thus, Carlson does not disclose nor suggest that the acoustic pick-up device has two microphones, nor that the position estimate circuit produces the error signal from audio signals from both microphones, nor that the first circuit of the position estimate circuit provides averages of the audio signals from both microphones in order to produce the error signal. Carlson further fails to disclose or suggest that a controller uses the error signal to compensate for the acoustic pick-up device being mis-positioned by providing the audio signals from the first and/or second microphones to an output.

The secondary reference Andrea discloses two input microphones for the purpose of noise cancellation. Andrea requires that both microphones be correctly positioned. In particular, Andrea explicitly states that "acoustic signals composed of speech or the like and background noise are supplied to the first microphone 12 .... The background noise is supplied to the second microphone 14 .... The op-amp 16 is adapted to subtract the noise signal from the second microphone 14 from the speech and noise signal from the first microphone 12 and to supply therefrom an electrical signal representing substantially the speech to the telephone unit 18 ...." (Col. 12, lines 55-66). In other words, the *basis* for Andrea's noise cancellation is that the first microphone is *correctly positioned as intended, i.e., toward the desired acoustic source,* and that the second microphone is also *correctly positioned as intended, i.e., away from the desired acoustic source* such that the second microphone generally does not receive acoustic signals from the acoustic source and generally receives only the noise signals so as to cancel the noise that is also received by the first microphone.

Thus it would not have been obvious to incorporate the two noise canceling microphone inputs of Andrea into the apparatus Carlson. As noted, Andrea's noise canceling microphone inputs relies on the fact that both microphones are *already correctly positioned.* Namely, Andrea requires that the first microphone to be correctly positioned to receive acoustic input from the desired acoustic source as well as any background noise and requires that the second microphone to be also correctly positioned away from the desired acoustic source such that the second microphone generally receives only acoustic input from the background noise so as to effectively cancel the noise at the first microphone. For example, Andrea notes that such arrangement of the microphones ensures that "the first microphone 12 receives both the speech from the operator and the background acoustic noise which is present in the vicinity, and the second microphone 14 essentially receives *only* the same background acoustic noise which is received by the first microphone." (Col. 14, lines 23-29, emphasis added). Andrea proceeds to further state that where the angle between the microphones is substantially outside of the stated preferred angle, the second microphone 14 would receive both the speech and background noise and thus *adversely* affect performance. (Col. 14, lines 30-39).

In contrast, the apparatus of Carlson provides audio feedback to facilitate the user in determining whether the user's mouth is too far/close to the single input microphone and/or whether the user is speaking too loudly/softly. Even if the noise canceling microphones of Andrea can be incorporated into the apparatus of Carlson, such noise canceling microphones can

only be effectively utilized for noise cancellation when *both* microphones are *correctly* positioned relative to the acoustic source (as Andrea relies on the fact that both noise canceling microphones are correctly positioned in order to perform the noise canceling). In other words, noise canceling microphones could only be used by Carlson separately and distinctly, i.e., mutually exclusively, from the use of the first microphone in determining whether the first microphone is correctly positioned.

Thus, even if the noise canceling microphones of Andrea were incorporated into the apparatus of Carlson, such combination would not read on the position estimation circuit producing the error signal (representing the estimate of the device being mis-positioned) from the audio signals from the first and second microphones as generally recited in the claims. In addition, such a combination would also not read on the first circuit of the position estimation circuit providing averages of audio signals from both microphones to produce the error signal, much less a controller that uses the error signal to compensate for the mis-positioning of the acoustic pick-up device by providing audio signals from the first and/or second microphones to the output, as generally recited in the claims.

It is noted that while Andrea allows the microphones to operate in a talk-thru mode rather than the noise canceling mode, such talk-thru mode actually disables one of the microphones such that only the second omnidirectional microphone provides the overall input for the system. Such a talk-thru mode thus allows sound sources other than those included in the noise canceling response area to be provided to the output of the system. (Col. 32, lines 55-56). However, Applicants note that the talk-thru mode of Andrea, either alone or in combination with Carlson, would not read on the elements as generally recited in the claims of both microphones receiving and transducing acoustic signals into audio signals, the position estimation circuit using the audio signals from both microphones to generate the error signal, and the first circuit of the position estimation circuit providing an average of the audio signals received from both microphones to produce the error signal, much less a controller using the error signal to compensate for the mis-positioning by providing the audio signals from the first and/or second microphones to the output. In other words, whether the microphones of Andrea are operating in noise canceling mode or the talk-thru mode, the combination of Carlson and Andrea do not read on the elements of the claims as the Examiner contends.

The secondary reference Ruegg does not read on the position estimation circuit being adapted to produce the error signal from audio signals generated by the first and second

microphones and a controller that uses the error signal to compensate for the acoustic pick-up being mis-positioned by providing the audio signals from the first and/or second microphones to the output. Rather, Ruegg selects either the directional or the omnidirectional microphone based on whether a predetermined threshold is exceeded. (Col. 2, lines 8-17 and col. 3, lines 18-25). In other words, if the signals generated by either microphone exceeds the threshold, the directional microphone is activated and the omnidirectional microphone is turned off. Otherwise, the omnidirectional microphone is activated and the directional microphone is turned off.

There is also a lack of motivation to incorporate Ruegg's directionality switching circuitry into the combination of Carlson and Andrea. Ruegg's directionality switching circuitry requires the selection of *either* the directional microphone *or* the omnidirectional microphone. In contrast, the noise canceling due-microphones of Andrea requires that *both* microphones be active so as to perform noise cancellation. Furthermore, even if Ruegg's directionality switching circuitry were added to the combination of Carlson and Andrea, the resulting apparatus would not read on the inventions as claimed. In particular, the combination of Carlson, Andrea and Ruegg would include a first microphone, the signals from which are used to determine whether the microphone is too far/close and/or whether the user is speaking too loudly/softly to thereby provide audio feedback to the user (Carlson) and, *only after* it is determined that the first microphone is correctly positioned, a second microphone that can *either* be used in conjunction with the first microphone for noise cancellation (Andrea) OR used alternately with the first microphone (Ruegg) (i.e., each of the noise canceling of Andrea and the selection of only one of the two microphones is mutually exclusive of the other).

As none of the possible configurations of the Carlson-Andrea-Ruegg combination could read on the inventions as claimed, the combination of Carlson, Andrea, and Ruegg cannot render the inventions as claimed obvious.

Withdrawal of the rejection of independent claims 1, 49, 51, 54, and 64 as well as claims dependent therefrom, under 35 U.S.C. §103(a) is respectfully requested.

Rejection of Various Dependent Claims Under 35 U.S.C. §103

Various dependent claims stand rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson in view of Andrea, Ruegg and Zoels and further in view of Badie, Ismail, Stern, Bowen, and/or Hou.

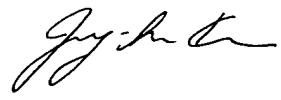
However, the addition of any or all of the additional secondary references Badie, Ismail, Stern, Bowen, and/or Hou does not make up for the deficiencies of Carlson in view of Andrea and Ruegg as discussed above. Thus, the various dependent claims are also believed to be allowable for at least similar reasons as those discussed above. Withdrawal of the rejection of the various dependent claims under 35 U.S.C. §103(a) is respectfully requested.

CONCLUSION

Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

In the unlikely event that the transmittal letter accompanying this document is separated from this document and the Patent Office determines that an Extension of Time under 37 CFR 1.136 and/or any other relief is required, Applicant hereby petitions for any required relief including Extensions of Time and/or any other relief and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 50-2315 (Order No. 01-6052).

Respectfully submitted,



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